Pharmacist Review of Computer Prescriber Medication Order Entry in Hospitals: A Prospective Observational Study of Pharmacist Interventions

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Background

- Except in emergency situations, current medication safety standards in hospitals require review of all medication orders by a pharmacist before the administration of the first dose.
- Pharmacist review of all medication orders, including after hours and overnight remains a challenge, especially in small hospitals or those in remote and rural communities.
- As a result, patients are put at risk of receiving improper or delayed treatment.
- Telepharmacists can provide support to hospitals by providing remote medication order review 24/7.
- To improve medication safety, computer-based prescriber medication order entry (CPOE) systems embedded with clinical decision support software have been implemented.
- The need for a pharmacist medication order review of CPOE is occasionally questioned.

Description

- A prospective observational study in a group of 12 specialty and community hospitals (28 - 403 beds) utilizing telepharmacist review of CPOE from 2300 -0700 H.
- Study timeline was a10 month block in 2017, three years following the implementation of a shared CPOE system with clinical decision support.
- The CPOE software utilized was Cerner PharmaNet Med Manager®.

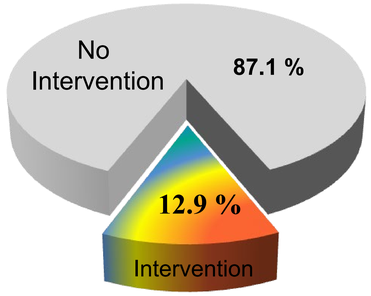
Action

- During the pharmacist CPOE review, medication orders requiring intervention, and reason for intervention were recorded.
- Pharmacist interventions included only those that were acute and could not be delayed until on-site pharmacist follow-up the next working day.
- Pharmacist interventions included the following:
  - Incomplete order (missing order information)
  - Incorrect order:
    - Drug dose, route, frequency, formulation, selection
    - Therapeutic interchange
  - Non-formulary medication (including dose/formulation).

Results

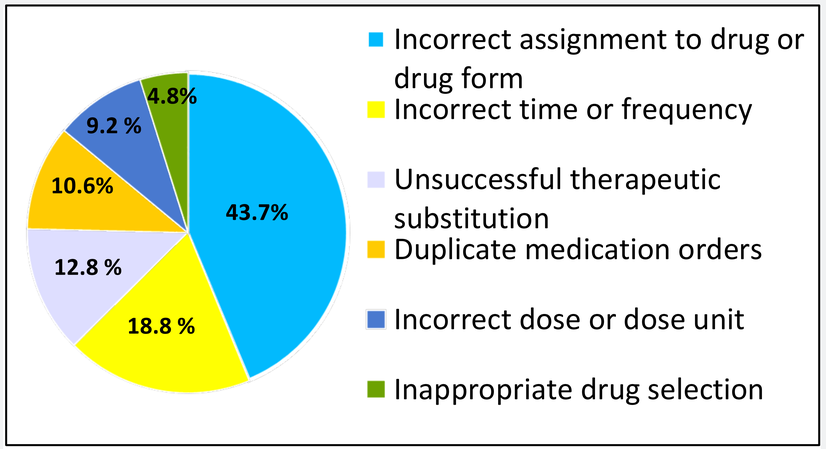
Figure 1: Computer-based Prescriber Order Entry - Pharmacist Intervention Rate

40,982 computer prescriber medication order entries were reviewed by the pharmacist

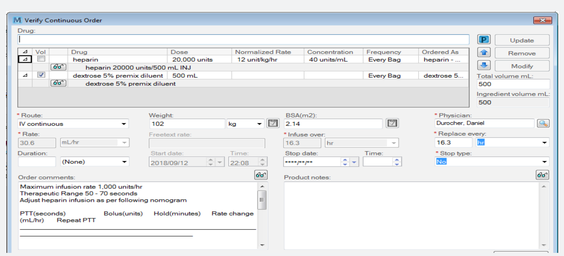


5,287 prescriber order entries had a problem identified that required pharmacist intervention

Figure 2: Pharmacist Intervention Categories



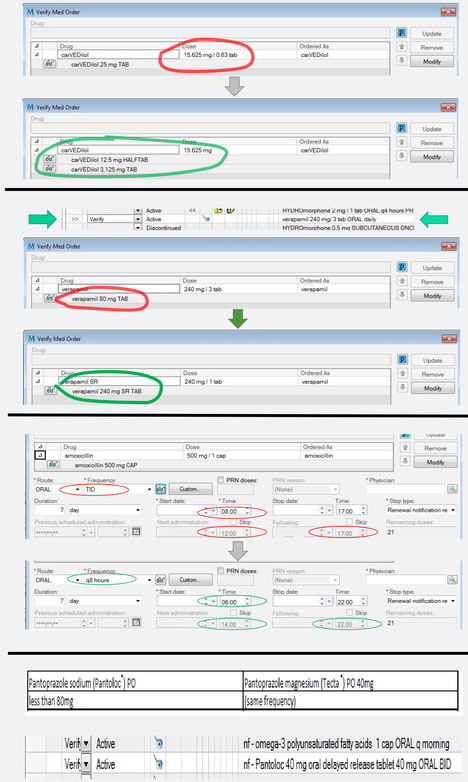
Intervention Examples



Calculated heparin rate based on patient's weight is 1224 units/h (30.6 ml/h) which exceeds the maximum infusion rate of 1000 units/h (25 mL/h) noted in the order comments

Pharmacist corrected heparin rate to 1000 units/hr (25mL/h)

Intervention Examples



System assigned incorrect tablet strength (tablet not divisible for dose).

Pharmacist assigned appropriate tablet strength

Incorrect medication formulation selected

Pharmacist assigned appropriate formulation for medication

Incorrect dosing times entered for antibiotic

Pharmacist assigned appropriate frequency

The automatic substitution failed

Pharmacist corrected non-formulary entry

Conclusions

- Even in hospital settings where a CPOE system with clinical decision support has been well established, a significant number of medication orders still require pharmacist intervention and clinical review in order to correct gaps in system functionality.
- Review of CPOE by a pharmacist before the first dose of a medication is administered is essential to ensure safe and timely administration of medication in hospitals.

Acknowledgement

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Disclosure Summary

Prech, P.	Employed by Northwest Telepharmacy Solutions
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